

**ABSTRACT**

A circuit board capacitor structure operable as a high voltage isolation barrier in communication circuitry. Capacitor electrodes form a capacitive structure directly on a printed circuit board's opposing sides. The PCB substrate intermediate the electrodes functions as the capacitive structure's dielectric material. The capacitor electrodes are sized such that the electrodes' area and the substrate's dielectric properties create the desired capacitance. Alternatively, a multi-layered PCB may be utilized where layer(s) is/are used to form the capacitive structure. The circuit board capacitor may couple communication circuitry located on the PCB's various sides.

10 The circuit board capacitor operates as a high voltage isolation barrier in data access arrangements, separating line and system side circuitry. Further, the high voltage isolation barrier may include multiple circuit board capacitors to realize differential communications and/or multiple datapaths. The capacitor structure can be flexibly arranged to minimize PCB real estate and be more cost-effective than discrete capacitors.

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